REGULATORY IMPACT ANALYSIS FOR PROPOSED ENERGY CONSERVATION STANDARDS FOR RESIDENTIAL CLOTHES WASHERS

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REGULATORY IMPACT ANALYSIS

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1. INTRODUCTION

The Department of Energy has determined that proposed clothes washer efficiency standards constitute an "economically significant regulatory action" under Executive Order 12866 "Regulatory Planning and Review" (58 FR 51735, October 4,1993). Therefore, the efficiency standards proposal requires a regulatory analysis. This document details several possible alternatives to the current proposal, and analyzes the costs and benefits of each.

2. METHODOLOGY

Each of the alternatives considered improve the overall efficiency of the clothes washer stock. In general, the effect on costs and market share are moderate in the non-regulatory scenarios compared with the proposed standard. A shift in market share to higher efficiency may increase the average retail price of new clothes washers. In some scenarios, these cost increases are partially mitigated by government rebates or credits. Operating costs will generally decrease due to a decline in energy consumption. Net present values of the scenarios described include all savings to consumers, but do not include government expenditures which would be needed to initiate them if those expenditures go back to consumers. In the case of manufacturer tax credits we have an estimate of the decrease of tax revenues from the credits, and we include that expenditure as a cost in the net present value calculation.

We calculate the impacts of the various regulatory scenarios with a modified version of the NES/Shipments model. The NES/Shipments model includes a consumer decision model and a full accounting of costs and benefits of clothes washer purchase and operating expenses. For the RIA, we extend the consumer decision model in the NES/Shipments spreadsheet to describe the expected response from the various alternative regulatory interventions. For most scenarios, we translate the regulatory intervention into an incentive that is input into a consumer choice model for the market share of high efficiency clothes washers. High efficiency clothes washers are defined by the engineering characteristics of the machines that the manufacturers said they would build for an MEF=1.257 standard. At the time efficiency and cost data was collected in 1997, it was assumed that this efficiency level would be reached by a horizontal-axis (H-axis) washer. Since it has subsequently been found that other washer designs can meet this efficiency level, it should not be construed as being limited to the H-axis type washer.

We select the same program time period for most (all but the voluntary standards scenario) of the different regulatory alternatives. Specifically we choose a six year program of 2004 to 2010.

The consumer choice model used to describe the clothes washer product choices is the one that is described in the Clothes Washer Consumer Analysis in Appendix J of the Clothes Washer Technical Support Document (TSD). This model describes the relative probability of a product choice in terms of a logit probability of purchase equation. The exponential in this equation has two coefficients that we use in this analysis, one is a constant calibration coefficient and another is a

coefficient that scales the influence of price. The calibration coefficient is set so that when there are no incentives, the market share for high efficiency machines is what it would be in the base case, while any price incentive (or equivalent incentive value) is multiplied by the average price coefficient obtained for "All Respondents" from the equipment choice model of the conjoint analysis of the Clothes Washer Consumer Analysis.

To compare each alternative quantitatively to the proposed conservation standards in terms of energy savings and net present value (or cost savings), it is necessary to quantify the effect of each alternative on the purchase and use of energy-efficient consumer products.. The key inputs to the NES/Shipments- RIA model are:

- energy prices and escalation factors;
- implicit market discount rates for trading off purchase price against operating expense when choosing appliance efficiency;
- consumer demand and income elasticities;
- price versus efficiency relationships for each consumer product;
- appliance stock data (purchase of new appliances or turnover rates for inventories).

The key measures of the impact of each alternative are:

- Residential Energy Use (EJ = 10^{18} joule): Cumulative, from the effective date of the new standard to the year 2030 for the appliance product. Electricity consumption is reported as primary energy. DOE agrees with the Advisory Committee's recommendation that the assumption of a constant conversion factor should be dropped in favor of a conversion factor that changes from year-to-year.
- Energy Savings. Cumulative energy use from base-case projection less alternative-policy-case projection.
- Net Present Value. Value of future savings from appliances bought in the period from 2004 to the year 2030. Calculated as difference: present value of equipment and energy expenditures in base case less present value of expenditures in alternative policy case. Future fuel and equipment expenditures are discounted to 1999 using 7% real discount rate. Fuel expenses are calculated for the life of the appliance. Since equipment prices from the Engineering Analysis were reported in 1997, 1997 constant dollars are used as the units for the Net Present Value.

2.1 No New Regulatory Action

We have carefully evaluated the case in which no regulatory action is taken with regard to clothes washer efficiency. This constitutes the "base case" scenario referred to in chapter 10 of the Technical Support Document. From our assessment of current market shares, equipment and operating costs, we forecast clothes washer shipments and subsequent efficiency of the stock, from 2004 through 2030 (see Chapters 9 & 10). We then calculate total source energy consumption for clothes washers (see Chapter 10). From this analysis, we find that the present value of clothes washer operating costs for the no regulatory action case is $120 billion, while total equipment expenditures over this period have a present value of $32.6 billion. The total water use in the base case scenario is 39 trillion gallons and the total energy consumption is 21.8 quads.

2.2 Enhanced Public Education & Information

Enhanced public education and information increases the sales of higher efficiency appliances by making the consumer more sure of the savings that will be obtained from an efficient appliance purchase. The results of the Clothes Washer Consumer Analysis (in Appendix J of the TSD)indicate that when consumers have complete information, the effective market discount rate for the purchase of a higher efficiency washer is 20%. This means that consumers are willing to accept a 20% return on additional purchase expenses when they trade off purchase price and operating savings, or for each dollar in annual savings consumers might be willing to pay up to five dollars in increased purchase price. In contrast, an intercept survey conducted by Northwest Energy Efficiency Alliance[1] indicates that the actual market discount rate is closer to 75% when consumers are shopping for their clothes washer. Some of the difference between the discount rate seen in a conjoint study and the rate seen in an intercept study can be explained in terms of imperfect information and inadequate education. The impact of enhanced public education may be to move the market discount rate for consumer decisions closer to the one found in the Clothes Washer Consumer Analysis.

We can translate the impact of a public education campaign into a change in the effective market discount rate for consumer decisions. If the public education and information campaign is 50% effective then the effective market discount rate for consumer purchase decisions would change from 75% to (0.5* 75% +0.5*20%) = 47%. And this change in the consumer market discount rate can be changed into an effective market incentive. In the base case, high efficiency machines save approximately $50 per year per household. With a 75% effective market discount rate, this is valued at approximately the same amount as a $67 price discount. For comparison, a 47% discount rate means that the $50 savings from higher efficiency machines is valued the same as a $106 price discount. The net effect of an approximately 50% effective public education campaign would be about the same as a $39 discount.

When we apply an effective incentive of $39 to the consumer decision model to calculate the impact of enhanced public education and information we obtain a total savings of 0.026 quads, 0.054 trillion gallons and a net public benefit of $0.079 billion for a program that extends from 2004 to 2010.

2.3 Financial Incentives

We consider several scenarios in which some form of financial incentive is provided to consumers in order to encourage the purchase of high-efficiency clothes washers. We consider three types of incentives: tax credits, rebates and subsidies. Tax credits can be granted to consumers who purchase high-efficiency clothes washers. Alternatively, the government can issue tax credits to manufacturers in order to offset costs associated with producing high-efficiency designs. We also consider the scenario in which the government provides consumers with a cash rebate at the time of purchase. The effects of rebates are similar to those of tax credits. Finally, we consider the case of subsidies designed to remove market barriers which affect primarily low-income and senior-only households. The analysis models financial incentive programs assuming that they begin in 2004 and continue for six years, after which time the program ends, and the market returns to the base case. Financial incentive programs create a market shift that increases the relative proportion of high efficiency (MEF > 1.257) clothes washers.

The approach for modeling consumer incentives is to utilize portions of the Clothes Washer Consumer Analysis. In this study, a conjoint analysis was used to develop a consumer choice model for high-efficiency clothes washer product choices. A price elasticity is included in this consumer choice model, and we apply the derived choice function to calculate the increase in high efficiency clothes washer market share that would result from an incentives program. Given the baseline forecast for high efficiency clothes washer market shares, and the consumer choice model the high efficiency clothes washer market share with incentives is calculated. The high efficiency clothes washer market share is then used in the integrated NES/Shipments model to calculate the impact of the incentives program. For manufacturer incentives we make assumptions about the behavior of manufacturers and consumers to estimate the approximate change in high efficiency clothes washer market share

2.3.1 Tax Credits to Consumers

DOE assumes tax credits equal to 15% of the cost of high-efficiency models. DOE also assumes that approximately 60% of consumers purchasing a clothes washer would take advantage of the tax credit. Although the program remains in effect for only six years, it will produce energy savings throughout the period from 2004 to 2025, because high-efficiency units bought under the program remain in the stock for many years. The total source energy savings expected from this program is 0.041 quads, with a net present value of $0.125 billion.

Discussion. The Energy Tax Act of 1978 (PL 95-618) provided a homeowner with a tax credit of up to 15% of $2,000 for the installation of energy-saving materials and equipment. This tax credit allowed the taxpayer to use this credit in one year or over a number of years, but it could not exceed $300 for a given residence.

Tax credits for appliances would require new legislation that would include all covered products. The use of similarly structured tax credits for the purchase of energy-efficient appliances

is apt to have only a marginal effect because the size of the credit would be modest in most cases. The costs of such a program would be borne by all taxpayers because it would result in less tax revenues to the government.

Tax credits can affect demand and supply for higher efficiency products in two ways. First demand for higher efficiency products is increased by decreasing the effective price of products qualifying for the tax credit. Secondly the tax credit insulates consumers from the higher prices that manufacturers may charge for higher efficiency products. A potential increase in markups and profit margins can encourage competition that can increase supply.

But tax credits do not fully resolve market imperfections that may keep consumers from purchasing higher efficiency products. Optimal use of tax credits still requires substantial information about the savings obtainable from efficiency, information about the tax credit program, and work and effort to fulfill the paperwork requirements of the tax credit program. Depending on the cost of this information and the program paperwork requirements, a tax credit program may still not enable consumers to receive the benefits of higher efficiency products at minimum cost.

Quantitative description. We based our calculations on a program offering a tax credit of 15% of the cost of a higher energy efficiency appliance for 60% of consumers. This program might be more easily administered than a rebate program because it could be carried out through an existing organization, the IRS. The program as evaluated here would return to a participating consumer exactly the same amount of money as the rebate program described below. The most important difference to the consumer between rebate and tax credit programs is that a rebate can be obtained quickly whereas a tax credit is delayed until income taxes are filed or a tax refund is provided by the IRS. This may mean that those consumers not having ready cash to purchase a more expensive washer, are not as likely to take advantage of a tax credit program as compared to a rebate program. To simulate this impact, DOE has assumed that 60% of consumers would purchase more energy-efficient products as a result of the tax credit program. The forecast results show energy savings of 0.41 quads for the consumer tax credit program alternative. The net present value (in 1997 dollars), discounted at 7% real to 1999, is $0.125 billion.

2.3.2 Tax Credits to Manufacturers

A manufacturer tax credit proposal was formulated by some stakeholders who participated in the negotiation. The proposed manufacturer tax credit program would span the period 2001 to 2007. In the negotiated tax credit proposal, manufacturers obtain a $50 per machine credit that satisfies a Tier 1 requirement of 1.26 minimum MEF and a credit of $100 per machine that satisfies a Tier 2 requirement of an MEF of 1.42 or more before 2004 and an MEF of 1.50 or more in 2004 to 2007. The negotiated proposal also allows for tax credits for high efficiency refrigerators. The tax credits are capped at $30 million per manufacturer per Tier, or $60 million per manufacturer.

In this analysis we will analyze the effect of a slightly simpler manufacturer tax credit program. We assume that the program is for clothes washers only, and for comparison to other

regulatory options we will examine tax credits assuming a project period of 2004 to 2010. We also assume that the second tier is fixed at MEF = 1.42. When we analyze this modified tax credit scenario, the source savings ranges from 0.330 to 0.153 quads (depending on the assumptions of the analysis), with a net present value ranging from $217 million to $756 million.

Discussion. According to the assumptions of the Manufacturer Impact Analysis (MIA) described in Chapter 11 of the TSD, changes in tax revenues have the largest impact on the net cash flow stream from which capital is accumulated for investment. The MIA assumes that there is no markup or pass through of tax costs to the consumer. This implies that there are two main impacts of tax credits: (1) Tax credits change the net corporate cash flow and the amount of cash available for investment in improved efficiency production lines (i.e. they offset potential adverse manufacturer impacts of standards). And (2) tax credits provide a motivation for manufacturers to produce higher efficiency machines since the tax credits affect the after-tax profits of the company. Specifically, if typical before-tax profit margins are 6% and the manufacturer price of a regular clothes washer is $211 then the profit per unit is approximately $12 per machine. A tax credit of $50 to $100 per machine may likely allow a high efficiency machine to make more of a contribution to the after-tax profits than a less efficient machine, and manufacturers may chose to produce the higher efficiency machines in order to capture this added contribution to after-tax profits. Therefore, large per-unit tax credits may motivate the manufacturers who can, to produce the number of machines that will qualify for the tax credits.

The extent to which tax credits would encourage manufacturers to produce machines beyond those that qualify for the credit is currently unknown. It is possible that tax credits will allow manufacturers to invest in advertising, manufacturer rebates and consumer education activities that will allow them to grow the market for their high efficiency product lines. If tax credits cover some of the fixed investment costs of bringing up higher efficiency product lines, then it is possible that the marginal cost of producing additional machines will be low enough to allow manufacturers to expand market share beyond the number of machines that qualify for the tax credit. On the other hand, if the demand for high efficiency machines is less than or equal to the number of qualifying machines at the marginal cost for added production, then the number of machines sold in response to the tax credit will be about equal to the number which qualify.

Quantitative Description. In this analysis we analyze the effect of manufacturer tax credits for clothes washers only, and for comparison to other regulatory options we examine tax credits assuming a project period of 2004 to 2010. To analyze tax credit impacts, we assume that six manufacturers produce machines in both qualifying efficiency tiers. We further assume that two of the six manufacturers are already producing machines at the qualifying efficiency levels and that four of the six will produce machines that they would not have produced without the tax incentive. In addition, we assume that, during the course of the program, there is an additional increase in the base case “h-axis/high efficiency (MEF of 1.257) market shares by a factor ranging from 1.0 (the low estimate) to 2.0 (the high estimate). This increase in high efficiency market share theoretically arises from the increased manufacturer competition and the decreased marginal cost of production resulting

from the increased investment in high-efficiency production lines.

When we analyze this modified tax credit scenario, the source savings range from 0.330 to 0.153 quads (depending on whether or not there is an increase in the h-axis market share by a factor of 2.0), and the net present value of the program ranges from $203 million to $707 million.

2.3.3 Consumer Rebates

There are two possible scenarios considered which involve consumer rebates. Like the tax credit scenarios, each lasts for 6 years. The rebate program targets high efficiency machines with an MEF at least as high as 1.257. Such a rebate results in a source energy savings of 0.072 quads and a net present value of $0.220 billion.

Discussion. Providing rebates to consumers who purchase energy-efficient appliances would be difficult to implement. Although manufacturers now occasionally offer rebates as marketing tools, there is no consistent or large-scale model for a nationwide program. The concept of government-mandated rebates would entail complex interference in the marketplace; decisions would need to be made on which products should qualify, amount of rebate, time period covered, etc.

The rebate concept could be coupled with a tariff, much like the proposed "gas-guzzler tax" for automobiles; consumers who purchased inefficient units would be charged a federally imposed tax. Areas of the country (e.g. the Northwest) that have had aggressive rebate programs have seen an approximate doubling of the market share for high efficiency clothes washers compared to the national average.

Quantitative Description. A Federal program that gives consumers a rebate to encourage the purchase of energy-efficient consumer products was analyzed. This program would apply to all new consumer products whether they are replacements or for new construction. The program was assumed to provide a rebate of 15% of the price of a high efficiency product. The assumption of a 15% rebate has been chosen because Congress has in the past approved similar financial incentives for energy conservation retrofits of building shells and for installing renewable energy systems, and the 15% rebate is approximately the size of the rebate for successful programs in the Northwest.

The effect of the rebate program is modeled by reducing the price of models with a MEF of at least 1.257 (35% energy reduction level) by 15% and calculating the increase in the market share of the higher efficiency machines using data from the Clothes Washer Consumer Analysis. The Clothes Washer Consumer Analysis provided an estimate of the price elasticity for a logit product choice model for energy efficient clothes washers. We calculate the increase in the 1.257 MEF level market share over the base case given the 15% price incentive. This scenario is then compared to the base case scenario and costs and benefits are calculated.

When we analyze this modified tax credit scenario, the source savings is 0.072 quads, and the net present value of the program is $0.22 billion.

2.3.4 Low Income and Seniors Subsidy

The final financial incentive we consider is a subsidy targeted at low-income and senior-only households. One of the market barriers to higher efficiency clothes washers is higher first cost. These expenses can be a particular burden on low-income and seniors-only households. The subsidy program provides an amount equivalent to 25% of the price of a high efficiency clothes washer. According to the RECS survey, 28% of current households are low-income or senior-only.[2] From the size of the incentive and size of the eligible market, we can calculate the market-weighted incentive for this program and the average impact of the program using the product choice model from the Clothes Washer Consumer Analysis. Consequently a market shift results which continues for the 6 years that the program is in place. The total source energy savings associated with this alternative is 0.031 quads. Net present value is $0.095 billion.

2.4 Voluntary Efficiency Targets

The voluntary efficiency target scenario considers the possibility that manufactures will include energy efficient design in all new clothes washers, in the absence of any regulatory intervention. While the proposed standards are scheduled to go into effect in 2004 (2007 for tier 2), the impact of the voluntary efficiency targets are assumed to be equivalent to an 1.257 MEF standard level that takes effect at some later date. The analysis considers the possibility that the delay in adoption of more efficient design is either 5 or 10 years.

The effect of voluntary efficiency targets is simply modeled by assuming that all of the market share held by design options which are less efficient than a 1.257 MEF (35% reduction in energy usage) is transferred to the 1.257 MEF level. This market shift is assumed to take place abruptly in either 2009 or 2014. The results of this scenario is a source savings of 4.55 quads and a net present value of $12.38 billion in the case of a 5-year delay, or a source savings of 3.09 quads and a net present value of $8.54 billion in the case of a 10-year delay.

The Federal government currently has a voluntary energy efficiency target program called Energy Star. Energy Star sets voluntary energy efficiency goal and educates consumers on the meaning of an appliance meeting this goal. Information on products meeting this goal are disseminated through the Internet and publications. Currently four of the five major U.S. clothes washer manufacturers have at least one model that meets the Energy Star criteria. These manufacturers also sell many models that do not meet the criteria. The affects of this program are included in the national impacts analysis of the base case.

Discussion. The Energy Policy and Conservation Act (EPCA) called for industry to meet voluntary energy-efficiency targets for the covered products. If industry did not meet the voluntary targets, provisions were made for establishing Federal standards. In amending the Act, NECPA

(National Energy Policy and Conservation Act), Congress specifically changed the legislation to provide for immediate establishment of Federal standards to ensure the timely manufacture of energy-efficient consumer products. Although it is possible that voluntary targets might have been as effective as mandated performance standards in achieving the energy savings goals, there probably would have been a considerable time lag because of the many uncertainties associated with a program requiring concurrence from so many participants as well as uncertainties about future consumer demand for energy-efficient products.

Quantitative Description. It is assumed for analysis purposes that the voluntary program would specify the energy-efficiency levels of the performance standards as goals. A fully voluntary program is assumed to cause a 10-year delay in achieving the energy conservation goals of the proposed standards. A voluntary program that is made mandatory if the goals are not met is assumed to achieve the energy efficiencies of the performance standards with a 5-year delay. Thus, the effects of a voluntary program are bounded by the assumptions of a 5- to 10-year delay.

2.5 Mass Government Purchases

We also consider a scenario where the Federal, State and local governments purchase high-efficiency clothes washers. This alternative assumes a Government agency such as the U.S. Department of Housing and Urban Development (HUD) purchases high efficiency washers for low income housing. We assume a program in which 25% of the 1.3 million households in public housing would participate in the program. We also assume that only washers reaching the end of their lifetime of 14 years would be replaced. Over a 6 year program period, this would result in a replacement of 138,000 clothes washers and would result in a source energy savings of 0.006 quads, with a net present value of $0.019 billion.

Quantitative Description. To analyze the potential of a mass government purchase program for public housing residents, *we* use the population of public housing units, 1.3 million, as the starting point of the calculation. We assume that approximately 25% of residents have the potential of participating in the program for the replacement of existing clothes washers. Because clothes washers have a lifetime of 14 years this corresponds to an annual sales volume of 0.25 * 1.3 million /14 = 23000/year. In addition, we assume a six year program period. We model this increment in sales by an incentive that produces an increase in h-axis machines of this magnitude. Such an incentive is found to be equivalent to a 1.5% price incentive on average for high efficiency machines. The result of an approximate 23000/*year* increase in sales of h-axis machines is an energy savings of 0.006 quads, 0.013 trillion gallons and a net present value of $0.019 billion.

2.6 Early Replacement Programs

An early replacement program would encourage consumers to discard their existing

appliances earlier and buy new appliances. This is most useful if there is a large difference between the efficiencies of old and new appliances. Also, if there is an expected further increase in appliance efficiency, then buying a less efficient appliance now instead of more efficient ones in the future may not increase energy savings over the lifetime of the appliance.

2.6.1 Early Replacement with Existing Efficiencies

The purpose of this program would be to remove older, presumable more inefficient models in the existing the clothes washer stock. The current integrated NES/Shipments model provides an accounting of the market of early replacers, and can examine the effects of a program that specifically targets that market segment. We assume that such a program would last for six years and result in a maximum 50% increase in the number of consumers replacing their clothes washer early during the program. We find that a program that an early replacement program targeting current machines has a energy savings of 0.004 quads, and a net present benefit of $0.024 billion.

2.6.2 Early Replacement with Washer Having a 35% Reduction in Energy Use

In this program, the Government would encourage consumers to replace their older less efficient clothes washers with new efficient clothes washers. We assume that the new washers would have a 35% reduction in energy usage. We assume a 15% increase in the size of the early replacement market, and allocate the new purchases to machines of the higher efficiency level. We assume that the increase in early replacements is less than replacements with current efficiency clothes washers because of the higher cost of the energy efficient machines. We find that a program that is an early replacement program targeting high efficiency machines has an energy savings of 0.078 quads, and a net present benefit of $0.238 billion.

2.7 Performance Standard

Discussion. The only alternative that fully complies with the Act is the setting of energy-efficiency or performance standards. This is the alternative found in the proposed regulation.

The standards will establish the maximum energy consumption or minimum efficiency level permitted for each product class but will not prescribe the means by which that level is to be achieved.

Performance standards will allow manufacturers the flexibility that prescriptive standards do not. Also, performance standards must be viewed in conjunction with labeling and consumer education/information programs because of the requirements in the Act. Labeling and consumer education will ensure that purchasers are aware of the benefits accruing from the purchase and use of the more energy-efficient products; in the long term they encourage the manufacture and purchase of even more energy-efficient products than required by the proposed standards. In this context, the proposed standards provide a balanced approach to regulating the manufacture and purchase of

efficient consumer products that cannot be achieved by any other alternative or group of alternatives. This balanced approach will ensure that the regulation corrects both the demand and supply-side market imperfections, and that energy savings will be realized.

Quantitative Description. Performance standards were quantified by assuming that all products would comply with the standards as proposed. That is, all manufacturers would meet the deadlines for the 2004 efficiency or energy consumption levels, and, after existing stocks of unregulated products are depleted, only products meeting the proposed standards would be distributed in commerce. Maximum benefits do not accrue immediately, however, because the standards do not require retrofitting of existing consumer products, so it will take some time to replace all non-regulated products with regulated products.

3. RESULTS

Total source savings, water savings and net present value of each of the non-regulatory alternatives is given in Table RIA.1. For comparison the proposed negotiated efficiency standard is included at the bottom of the table. Government expenditures related to the scenarios are not included in net present value.

Table RIA.1 Results for Non-regulatory Alternative

Scenario	Source Energy Savings (Quads)	Water (trillion gals.)	NPV (billion 1997$)
*No New Regulatory Action (*Base Case*)*	0.000	0.000	0.000
Public Education	0.026	0.054	0.079
Consumer Tax Credits	0.041	0.085	0.125
Manufacturer Tax Credits	0.153 - 0.330	0.299-0.666	0.217-0.756
Consumer Rebates High-Efficiency	0.072	0.150	0.220
Low Income and Seniors Subsidy	0.031	0.065	0.095
Voluntary Efficiency Target (5-year delay)	4.55	9.97	12.38
Voluntary Efficiency Target (10-year delay)	3.09	6.81	8.54
Mass Government Purchases	0.006	0.013	0.019
Early Replacement Program (w/ Current)	0.004	0.006	0.025
Early Replacement Program (w/ H-axis)	0.078	0.161	0.238
Proposed Negotiated Standard	5.52	11.59	15.33

Table RIA.2 Non-regulatory Alternatives Assumptions

Alternative Program	**Assumptions** **Effect (Change in inputs to shipment and NES models)**
No new regulatory action	Base case
Enhanced public education	6 year program; decrease market discount rate in consumer decision model from 75% to 47%, equivalent to $39 financial incentive.
Consumer tax credits	15% tax credit – 15% of the cost of a higher energy efficiency washer; 60% of consumers would participate Reduce cost of higher efficiency washers by 15% for 60% of the consumers
Manufacturer tax credits	$50 to $100 per machine credit for two efficiency tiers (1.26 and 1.42) with a maximum credit of $30 million per manufacturer per tier.
Rebates (consumer)	rebate of 15% of the cost of energy conservation subtract 15% from the retail cost for high efficiency (35% level) machines.
Low income and senior subsidy	assume: a 6 year program; 25% decrease in the retail cost for high efficiency (MEF > 1.257) clothes washers for 28% of households.
Voluntary energy efficiency targets (5-yr delay)	5 year delay in achieving the energy conservation goals of the proposed standards change standard start date by 5 years
Voluntary energy efficiency targets (10-yr delay)	10 year delay in achieving the energy conservation goals of the proposed standards change standard start date by 10 years
Mass government purchases	replacement sales of 25% of HUD public housing households are assumed to be high efficiency clothes washers for 6 years
Early replacement with existing market distribution of efficiencies.	6 year program; 50% increase in the early replacement sales where replacements are with current market efficiency
Early replacement with 35% efficiency	6 year program; 15% increase in the early replacement sales where the incremental sales increase are all high efficiency clothes washers.
Performance standards	proposed standard (see NOPR)

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